AMENDMENT TO THE CLAIMS

1. (original) A method of determining mass unbalance of an actuator mechanism in a system, the method comprising:

calculating a center of gravity in first x and y components with respect to a first coordinate system of the actuator mechanism;

calculating the center of gravity in second x and y components with respect to a second coordinate system of the actuator mechanism; and

calculating a total mass unbalance of the actuator mechanism as function of the first x and y components and the second x and y components.

2. (original) The method of claim 1, wherein calculating the center of gravity of the actuator mechanism with respect to the first coordinate system comprises:

calculating the first y component in the first coordinate system, wherein the first y component is in a first y-axis that intersects the pivot shaft of the actuator mechanism and is parallel to a longitudinal axis of the system; and

calculating the first x component in the first coordinate system, wherein the first x component is in a first x-axis that intersects the pivot shaft of the actuator mechanism and is normal to the first y-axis.

3. (original) The method of claim 2, wherein calculating the first y component in the first coordinate system comprises:

obtaining a first VCM current (I_{x+}) when the system is oriented in a first orientation; and

obtaining a second VCM current (I_{x-}) when the system is oriented in a second orientation.

4. (original) The method of claim 3, wherein the first y component is calculated as a function of the first VCM current (I_{x+}), the second VCM current (I_{x-}), a torque constant (K_t) of the VCM and a mass (m) of the actuator mechanism.

5. (original) The method of claim 2, wherein calculating the first x component in the first coordinate system comprises:

obtaining a third VCM current (I_{y+}) when the system is oriented in a third orientation; and

obtaining a fourth VCM current (I_{y-}) when the system is oriented in a fourth orientation.

6. (original) The method of claim 5, wherein the first x component in the first coordinate system is calculated as a function of the third VCM current (I_{y+}), the fourth VCM current (I_{y-}), a torque constant (K_t) of the VCM and a mass (m) of the actuator mechanism.

7. (original) The method of claim 1, wherein calculating the center of gravity of the actuator mechanism with respect to the second coordinate system further comprises:

calculating the second y component in the second coordinate system, wherein the second y component is in a second y-axis that intersects the pivot shaft of the actuator mechanism and is parallel to a longitudinal axis of the track accessing arm; and

calculating the second x component in the second coordinate system, wherein the second x component is in a second x-axis that intersects the pivot shaft and is normal to the second y-axis.

8. (original) The method of claim 7, wherein calculating the second center of gravity of the actuator mechanism with respect to the second coordinate system further comprises:

calculating a first angle between the first y-axis and a line that extends from the pivot shaft to a central axis of a storage media;

calculating a second angle between the second y-axis and the line that extends from the pivot shaft to the central axis of the storage media; and

calculating a third angle as a function of the first angle and the second angle.

9. (original) The method of claim 8, wherein the second x and y components are calculated as a function of the first x and y components and the third angle.

10. (original) The method of claim 9 and further comprising calculating the center of gravity of the actuator mechanism by taking the square root of the sum of the second x component squared and the second y component squared.

11. (original) The method of claim 10, wherein the total mass unbalance of the actuator mechanism is calculated by multiplying the center of gravity by the mass of the actuator mechanism.

12. (currently amended) ~~An apparatus~~A method of determining mass unbalance of an actuator mechanism, the method comprising:

~~a voice coil motor (VCM) configured to rotate an actuator mechanism about a pivot shaft, the actuator mechanism drawing~~obtaining a current drawn by the actuator mechanism from ~~the~~ a voice coil motor; and

~~processing circuitry coupled to the voice coil motor and configured to obtain the current drawn by the actuator mechanism and to calculate~~ calculating the mass unbalance of the actuator mechanism as a function of the current drawn by the actuator mechanism.

13. (currently amended) The ~~apparatus~~ method of claim 13, wherein ~~the processing circuitry is configured to calculate~~ calculating the mass unbalance ~~by~~ comprises~~implementing the steps comprising~~:

calculating a center of gravity in first x and y components with respect to a first coordinate system of an actuator mechanism;

calculating the center of gravity in second x and y components with respect to a second coordinate system of the actuator mechanism; and

calculating a total mass unbalance of the actuator mechanism as a function of the calculated first and second centers of gravity.

14. (currently amended) The ~~apparatus~~ method of claim 13, wherein ~~the processing circuitry is configured to calculate~~ calculating the center of gravity in the first y component with respect to the first coordinate system ~~by~~ comprises~~implementing the steps comprising~~:

obtaining a first VCM current (I_{x+}) when the actuator mechanism is oriented in a first orientation;

obtaining a second VCM current (I_{x-}) when the actuator mechanism is oriented in a second orientation; and

calculating the first y component in a first y-axis as a function of the first VCM current (I_{x+}) and the second VCM current (I_{x-}).

15. (currently amended) The ~~apparatus~~ method of claim 13, wherein ~~the processing circuitry is configured to calculate~~ calculating the center of gravity in the first x component with respect to the first coordinate system ~~by~~ comprises~~implementing the steps comprising~~:

obtaining a third VCM current (I_{y+}) when the actuator mechanism is oriented in a third orientation;

obtaining a fourth VCM current (I_{y-}) when the actuator mechanism is oriented in a fourth orientation;

calculating the first x component in the first x-axis as a function of the third VCM current (I_{y+}) and the fourth VCM current (I_{y-}).

16. (currently amended) The ~~apparatus~~ method of claim 13, wherein ~~the processing circuitry is configured to calculate~~ calculating the center of gravity in the second x and y components with respect to the second coordinate system comprises~~by implementing the steps comprising~~:

calculating a first angle between the first y-axis and a line that extends from the pivot shaft to a central axis of a storage media;

calculating a second angle between the second y-axis and the line that extends from the pivot shaft to the central axis of the storage media;

calculating a third angle as a function of the first angle and the second angle;

calculating the second y component as a function of the first x component, the first y component and the third angle; and

calculating the second x component as a function of the first x component, the first y component and the third angle.

17. (currently amended) The ~~apparatus~~ method of claim 16, wherein ~~the processing circuitry is configured to~~ calculating~~e~~ the ~~a~~ total mass unbalance of the actuator mechanism ~~by~~ comprises~~implementing the steps comprising~~:

multiplying the mass of the actuator mechanism with the square root of the sum of the second x component squared and the second y component squared.

18. (original) An apparatus comprising:

a voice coil motor configured to rotate the actuator mechanism about a pivot shaft, the actuator mechanism drawing a current from the voice coil motor; and

means for determining the mass unbalance of the actuator mechanism as a function of x an y components in first and second coordinate systems.

19. (original) The apparatus of claim 18, wherein the means for determining the mass unbalance of the actuator mechanism is configured to calculate the mass unbalance by implementing the steps comprising:

calculating a center of gravity in first x and y components with respect to a first coordinate system of an actuator mechanism;

calculating the center of gravity in second x and y components with respect to a second coordinate system of the actuator mechanism; and

calculating a total mass unbalance of the actuator mechanism as a function of the calculated first and second centers of gravity.

20. (original) The apparatus of claim 19, wherein the means for determining the mass unbalance of the actuator mechanism is configured to calculate the mass unbalance by implementing the steps comprising:

multiplying the mass of the actuator mechanism with the square root of the sum of the second x component squared and the second y component squared.